

ABSTRACT

An apparatus and method for determining an optimal transchest external defibrillation waveform that provides for variable energy in the first or second phase of a biphasic waveform that, when applied through a plurality of electrodes positioned on a patient's torso, will produce a  
5 desired response in the patient's cardiac cell membranes. The method includes the steps of providing a quantitative model of a defibrillator circuit for producing external defibrillation waveforms, the quantitative model of a patient includes a chest component, a heart component, a cell membrane component and a quantitative description of the desired cardiac membrane response function. Finally, a quantitative description of a transchest external defibrillation  
10 waveform that will produce the desired cardiac membrane response function is computed. The computation is made as a function of the desired cardiac membrane response function, the patient model and the defibrillator circuit model.